

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BP105769/TKO		FOR FURTHER ACTION See Form PCT/IPEA/416																	
International application No. PCT/FI2003/000047		International filing date (day/month/year) 21.01.2003	Priority date (day/month/year) --																
International Patent Classification (IPC) or national classification and IPC H04Q 7/32																			
Applicant Nokia Corporation et al																			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>9</u> sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table border="0"><tr><td><input checked="" type="checkbox"/> Box No. I</td><td>Basis of the report</td></tr><tr><td><input type="checkbox"/> Box No. II</td><td>Priority</td></tr><tr><td><input checked="" type="checkbox"/> Box No. III</td><td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td></tr><tr><td><input type="checkbox"/> Box No. IV</td><td>Lack of unity of invention</td></tr><tr><td><input type="checkbox"/> Box No. V</td><td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td></tr><tr><td><input type="checkbox"/> Box No. VI</td><td>Certain documents cited</td></tr><tr><td><input type="checkbox"/> Box No. VII</td><td>Certain defects in the international application</td></tr><tr><td><input type="checkbox"/> Box No. VIII</td><td>Certain observations on the international application</td></tr></table>				<input checked="" type="checkbox"/> Box No. I	Basis of the report	<input type="checkbox"/> Box No. II	Priority	<input checked="" type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/> Box No. IV	Lack of unity of invention	<input type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/> Box No. VI	Certain documents cited	<input type="checkbox"/> Box No. VII	Certain defects in the international application	<input type="checkbox"/> Box No. VIII	Certain observations on the international application
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Date of submission of the demand 02-08-2004		Date of completion of this report 19.04.2005																	
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88 Form PCT/IPEA/409 (cover sheet) (January 2004)		Authorized officer Peder Gjervaldsaeter / JA A Telephone No. +46 8 782 25 00																	

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI2003/000047

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1, 4-19 as originally filed/furnished
- pages* 2, 3, 3a received by this Authority on 11.02.2005
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages _____ as originally filed/furnished
- pages* _____ as amended (together with any statement) under Article 19
- pages* 20-25 received by this Authority on 11.02.2005
- pages* _____ received by this Authority on _____
- ☒ the drawings:
- pages 1-8 as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☒ the entire international application

☐ claims Nos. _____

because:

☐ the said international application, or the said claims Nos. _____
relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _____
are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. _____ are so inadequately supported
by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 1-33

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the
Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with
the technical requirements provided for in the Annex C-bis of the Administrative Instructions.

☒ See Supplemental Box for further details.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX III

All the present independent claims contain features that were not searched by the ISA.

It is clearly stated in the International Search Report that the part of the application relating to time sliced elementary streams (original claims 3, 32, 46, 54 and 60) has not been searched. Since all the independent claims now have been amended with this part of the application the present independent claims have not been searched by the ISA.

guiding the discovery of the services. The SI indicates various services of at least one broadcast network.

Latest appliances of broadcast have raised a need for power consumption consideration in the receiver, and some efforts for reducing power consumption in the receiver have been made. However, although these efforts are consistent with the SI, the receiver and the system do not benefit enough. Moreover, they are blind in respect of the broadcasting. In this case the receiver cannot detect, which of the streams carried within a multiplex are adapted to fit the power reduction principles and, possibly, which are not.

10 In view of various inherent limitations of broadcasting, it would be desirable to avoid or mitigate these and other problems associated with prior art systems. Thus, there is a need for identifying parts of broadband transmission in respect of the power consumption principles.

SUMMARY OF THE INVENTION

15 Now a method and arrangement have been invented to identify the parts of the broadband transmission in respect of the power consumption principles.

In accordance with an aspect of the invention there is provided a method for receiving a digital broadband transmission for saving power in a receiver, the method comprising the steps of: providing information on parts of the digital broadband transmission, which are adapted to fit for saving the power in the receiver, for detecting said parts in the receiver, detecting said parts based on said provided information, and switching at least part of the receiver on/off based on said provided information, wherein said digital broadband transmission at least partly comprises a time slice data broadband transmission and wherein at least one of said parts comprises a time sliced elementary stream, and said method comprises step of identifying the time sliced elementary stream based on said information.

In accordance with another aspect of the invention there is provided a method for transmitting a digital broadband transmission for saving power in a receiver, the method comprising the steps of: providing information on parts of the digital broadband transmission, which are adapted to fit for saving the power in the receiver, for categorising said parts for an identification in the receiver, and categorising said parts based on said provided information for switching at least part of the receiver on/off in accordance with said provided information, wherein said digital broadband transmission at least partly comprises a time slice data broadband

transmission and wherein at least one of said parts comprises a time sliced elementary stream, and said method comprises step of categorising the time sliced elementary stream based on said information.

- 5 In accordance with yet another aspect of the invention there is provided a system for providing a digital broadband transmission for saving power in a receiver, comprising: means for providing information on parts of the digital broadband transmission, which are adapted to fit for saving the power in the receiver, for detecting said parts in the receiver, means for detecting said parts based on said provided information, and means for switching at least part of the receiver on/off
- 10 based on said provided information, wherein said digital broadband transmission at least partly comprises a time slice data broadband transmission and wherein at least one of said parts comprises a time sliced elementary stream, and said system comprises means for identifying the time sliced elementary stream based on said information.
- 15 In accordance with yet another aspect of the invention there is provided a receiver for receiving a digital broadband transmission for saving power in a receiver, comprising: means for receiving information on parts of the digital broadband transmission, which are adapter to fit for saving the power in the receiver, for detecting said parts, means for detecting said parts based on said received
- 20 information, and means for switching at least part of the receiver on/off based on said received information, wherein said digital broadband transmission at least partly comprises a time slice data broadband transmission and wherein at least one of said parts comprises a time sliced elementary stream, and said receiver comprises means for identifying the time sliced elementary stream based on said information.
- 25 In accordance with yet another aspect of the invention, there is provided a transmitter for transmitting a digital broadband transmission for saving power in a receiver, comprising: means for providing information on parts of the digital broadband transmission, which are adapted to fit for saving the power in the receiver, for categorising said parts for an identification in the receiver, and means
- 30 for categorising said parts based on said provided information for switching at least part of the receiver on/off in accordance with said provided information, wherein said digital broadband transmission at least partly comprises a time slice data broadband transmission and wherein at least one of said parts comprises a time sliced elementary stream, and said transmitter comprises means for categorising the
- 35 time sliced elementary stream based on said information.

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For better understanding of the present invention reference is made to the following description, taken in conjunction with the accompanying drawings, and its scope will be pointed out in the appending claims.

BRIEF DESCRIPTION OF THE DRAWINGS

- 5 The invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 shows an example of the digital broadband transmission and reception principle for such a transmission in accordance with an embodiment of the invention,

10 Figure 2 shows an example of a relation between a DVB network, Transport Streams (TS)s, DVB service and components, in which the principles of an embodied invention can be applied,

Figure 3 illustrates an example of the appliance of the Delta-t jitter in a further embodiment of the invention,

Claims

1. A method for receiving a digital broadband transmission for saving power in a receiver, the method comprising the steps of:
 - 5 providing information on parts of the digital broadband transmission, which are adapted to fit for saving the power in the receiver, for detecting said parts in the receiver,
 - detecting said parts based on said provided information, and
 - switching at least part of the receiver on/off based on said provided information, wherein said digital broadband transmission at least partly comprises a time slice data broadband transmission and wherein at least one of said parts comprises a time sliced elementary stream, and said method comprises step of identifying the time sliced elementary stream based on said information.
- 10 2. A method according to claim 1, wherein the step of detecting further comprises step of separating said digital broadband transmission based on said provided information to said parts fitting for saving the power in the receiver and parts not fitting for saving the power in the receiver.
- 15 3. A method according to claim 1, wherein said provided information includes information on a size of a service session contained in a burst of the digital broadband transmission, and said method further comprises step of:
 - 20 comparing available memory in the receiver to said size, and
 - switching at least part of the receiver on/off based on a result obtained in said comparison.
- 25 4. A method according to claim 1, wherein the step of switching comprises steps of
 - switching the receiver functionally on during relevant bursts of the digital broadband transmission relating to a uniform data concept, and
 - switching the receiver at least partly off otherwise.

5. A method according to claim 1, wherein the step of providing information comprises step of transmitting a descriptor of the digital broadband transmission.
- 5 6.A method according to claim 5, wherein the descriptor is adapted to specify maximum number of bits per a service session that the digital broadband transmission is providing within a burst of the digital broadband transmission.
- 10 7.A method according to claim 6, wherein IP data streams contained in the at least one elementary stream are transmitted in accordance with time slicing broadband transmission.
- 8.A method according to claim 6, wherein the receiver is adapted to fit a memory usage of the receiver in accordance with the service session.
- 15 9.A method according to claim 1, wherein the step of providing information comprises step of limiting a size of a burst of the digital broadband transmission per a service session of the digital broadband transmission.
- 10.A method according to claim 1, wherein the step of providing information comprises step of indicating a maximum burst duration.
- 11.A method according to claim 10, wherein said power saving is applicable, if a remainder of the burst is lost.
- 20 12.A method according to claim 1, wherein the step of providing information comprises step of indicating a version of the time slice data broadband transmission.
- 25 13.A method according to claim 1, wherein the step of providing information comprises step of indicating that the elementary stream contained within transport stream is not transmitted in accordance with time slice data broadband transmission of the digital broadband transmission.
- 30 14.A method according to claim 12, wherein a broadband network of the digital broadband transmission is adapted to operate at multiprotocol encapsulation level and transmission stream level simultaneously with the different versions.

15. A method according to claim 1, wherein the step of providing information comprises step of indicating, to the receiver, a tolerance for a timing for a reception of a burst of the digital broadband transmission.
- 5 16. A method according to claim 1, wherein said information is provided in at least one of the following SI/PSI tables of the digital broadband transmission:
- a NIT table for providing information per each transport stream of the digital broadband transmission;
 - a PMT table for providing information per each elementary stream;
 - 10 a INT table for providing information per each elementary stream carrying at least one IP/MAC stream of the digital broadband transmission; and
 - a INT table for reducing a bandwidth of the digital broadband transmission.
- 15 17. A method according to claim 1, wherein the digital broadband transmission comprises at least one of the following: a multi-carrier signal transmission, a DVB transmission, a DVB-T transmission and a mobile DVB-T transmission.
18. A method for transmitting a digital broadband transmission for saving power in a receiver, the method comprising the steps of:
- 20 providing information on parts of the digital broadband transmission, which are adapted to fit for saving the power in the receiver, for categorising said parts for an identification in the receiver, and
- 25 categorising said parts based on said provided information for switching at least part of the receiver on/off in accordance with said provided information, wherein said digital broadband transmission at least partly comprises a time slice data broadband transmission and wherein at least one of said parts comprises a time sliced elementary stream, and said method comprises step of categorising the time sliced elementary stream based on said information.
- 30 19. A computer program comprising computer program code means adapted to perform the steps of the method of claims 1 or 18 when said program is run on a computer.

20. A computer program as claimed in claim 19 embodied on a computer readable medium.
21. A computer readable medium comprising program code adapted to carry out the method of claims 1 or 18 when run on a computer.
- 5 22. A carrier medium carrying the computer executable program of claims 19.
23. A system for providing a digital broadband transmission for saving power in a receiver, comprising:
- 10 means for providing information on parts of the digital broadband transmission, which are adapted to fit for saving the power in the receiver, for detecting said parts in the receiver,
- means for detecting said parts based on said provided information, and
- means for switching at least part of the receiver on/off based on said provided information, wherein said digital broadband transmission at least partly comprises a time slice data broadband transmission and wherein at least one of said parts comprises a time sliced elementary stream, and said system comprises means for identifying the time sliced elementary stream based on said information.
- 15 24. A receiver for receiving a digital broadband transmission for saving power in a receiver, comprising:
- 20 means for receiving information on parts of the digital broadband transmission, which are adapted to fit for saving the power in the receiver, for detecting said parts,
- means for detecting said parts based on said received information, and
- 25 means for switching at least part of the receiver on/off based on said received information, wherein said digital broadband transmission at least partly comprises a time slice data broadband transmission and wherein at least one of said parts comprises a time sliced elementary stream, and said receiver comprises means for identifying the time sliced elementary stream based on said information.

25. A receiver according to claim 24, wherein the means for detecting further comprises means for separating said digital broadband transmission based on said provided information to said parts fitting for saving the power in the receiver and parts not fitting for saving the power in the receiver.
- 5 26. A receiver according to claim 24, wherein the parts comprise one of elementary streams of the digital broadband transmission and transport streams referred to in a NIT table.
27. A receiver according to claim 24, wherein the receiver further comprises a mobile DVB-T receiver.
- 10 28. A receiver according to claim 27, wherein the receiver further comprises a mobile station for interaction with the digital broadcast transmission.
29. A receiver according to claim 24, wherein said provided information includes information on a size of a service session contained in a burst of the digital broadband transmission, and said receiver further comprises:
- 15 means for comparing available memory in the receiver to said size, and
- means for switching at least part of the receiver on/off based on a result obtained in said comparison.
30. A transmitter for transmitting a digital broadband transmission for saving power in a receiver, comprising:
- 20 means for providing information on parts of the digital broadband transmission, which are adapted to fit for saving the power in the receiver, for categorising said parts for an identification in the receiver, and
- means for categorising said parts based on said provided information for switching at least part of the receiver on/off in accordance with said provided
- 25 information, wherein said digital broadband transmission at least partly comprises a time slice data broadband transmission and wherein at least one of said parts comprises a time sliced elementary stream, and said transmitter comprises means for categorising the time sliced elementary stream based on said information.
- 30 31. A transmitter according to claim 30, wherein the means for categorising further comprises means for categorising said digital broadband transmission

based on provided information to said parts fitting for saving the power in the receiver and parts not fitting for saving the power in the receiver.

5 32. A transmitter according to claim 30, wherein the parts comprise one of elementary streams of the digital broadband transmission and transport streams referred to in a NIT table.

10 33. A transmitter according to claim 30, wherein said provided information includes information on a size of a service session contained in a burst of the digital broadband transmission, and said transmitter further comprises:
means for adapting the receiver to compare available memory in the receiver to said size, and to switch at least part of the receiver on/off based on a result obtained in said comparison.